Kuroshio Monitoring

- Estimations of RFI and Land Contaminations –

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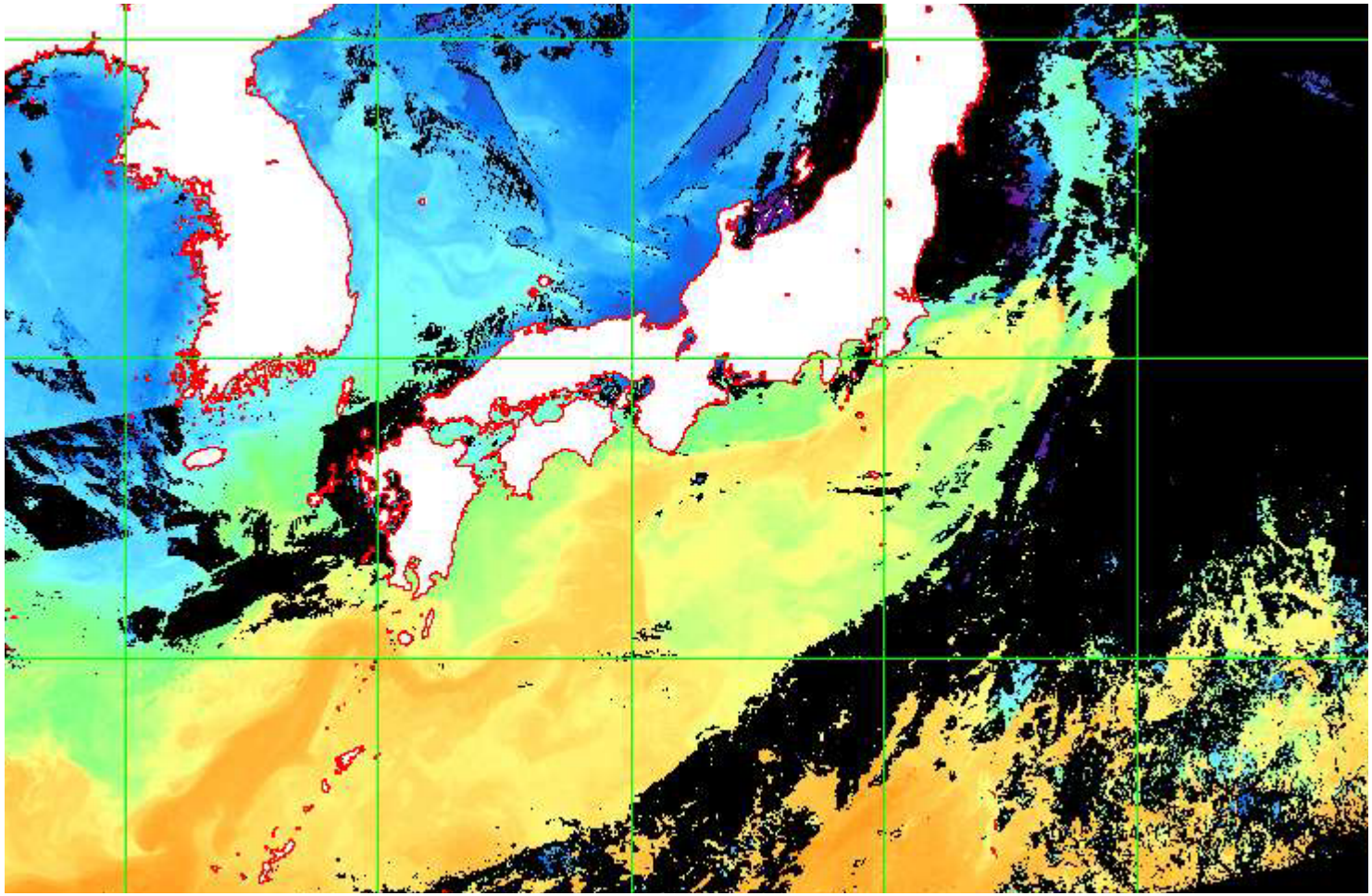
AVHRR Infrared Image on May 10, 2004

courtesy by Japan Coast Guard



RFI

Purpose

To monitor the Kuroshio Current meandering along the southern coast of Japan

by AMSR-E

Problems

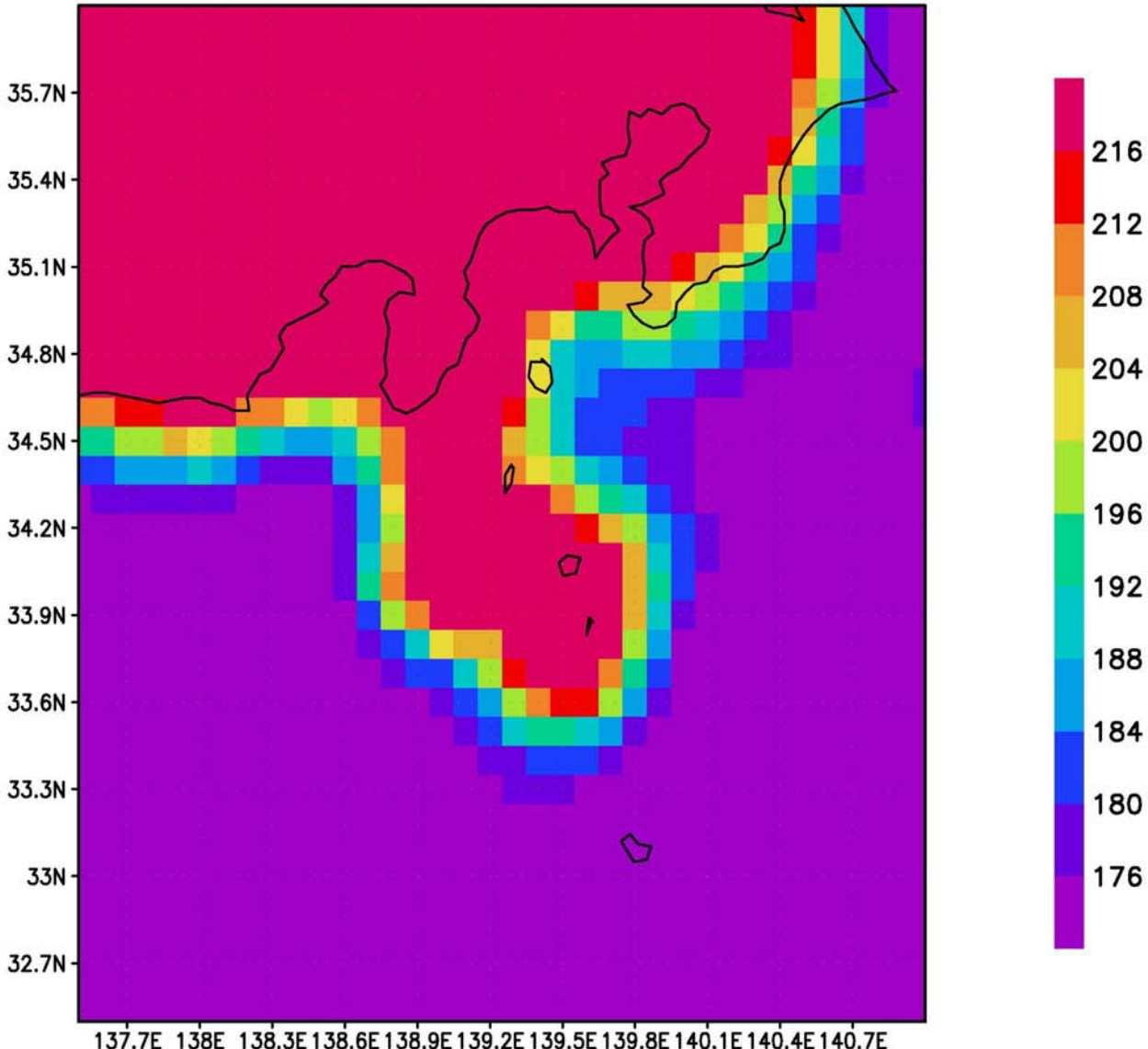
1. Radio Frequency Interference (RFI)

at 6.925 GHz

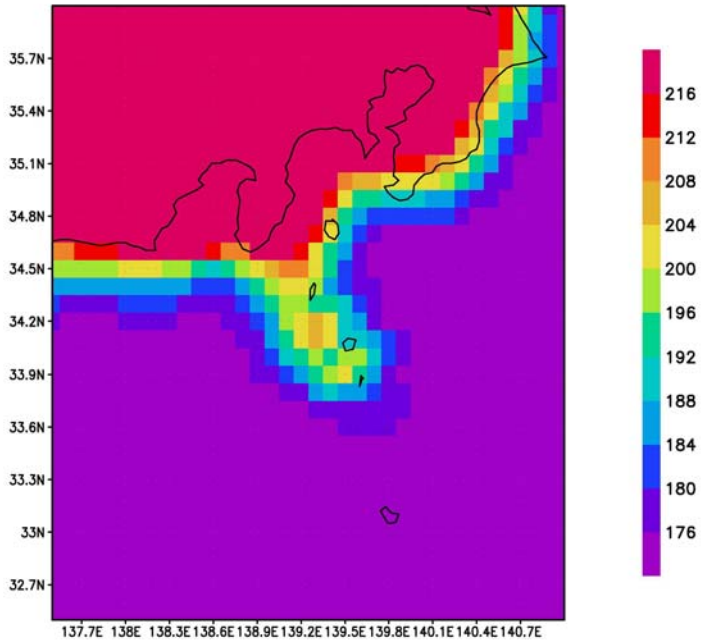
2. Land contaminations

Example of large RFI

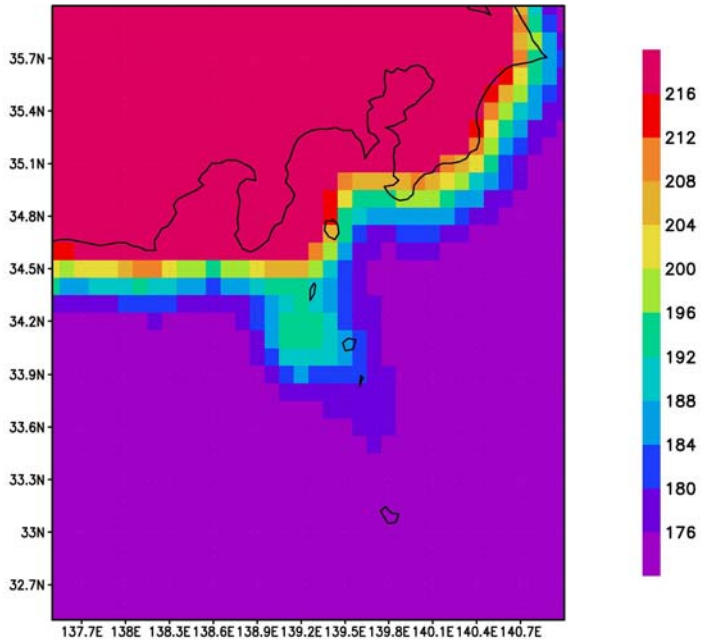
on Jan. 28, 2003 along path 106D



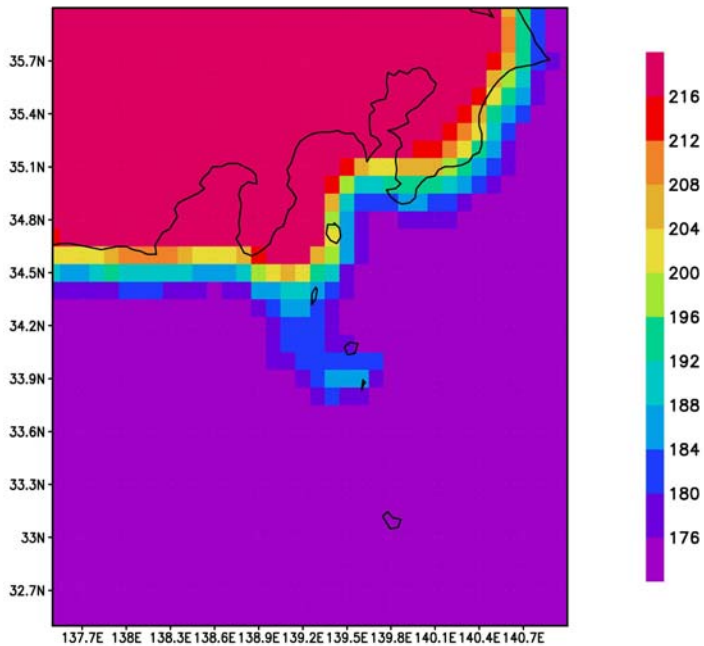
May 7, 2003



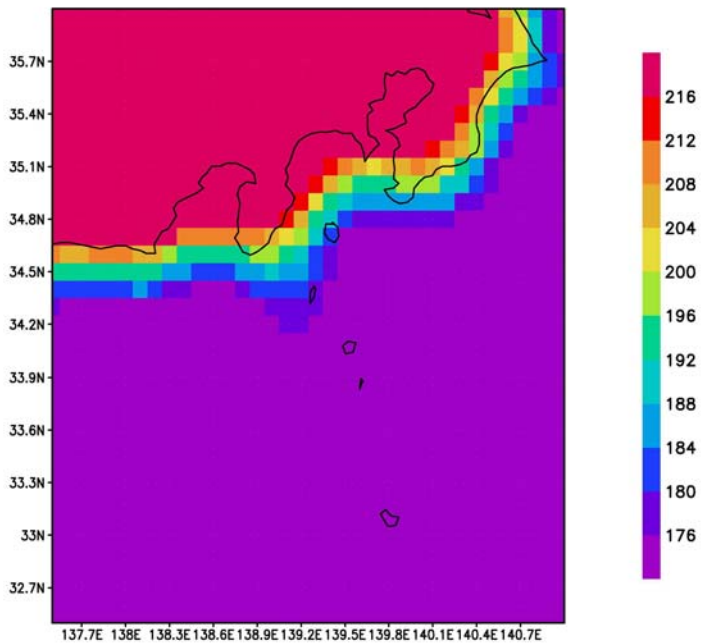
Jul. 10, 2003



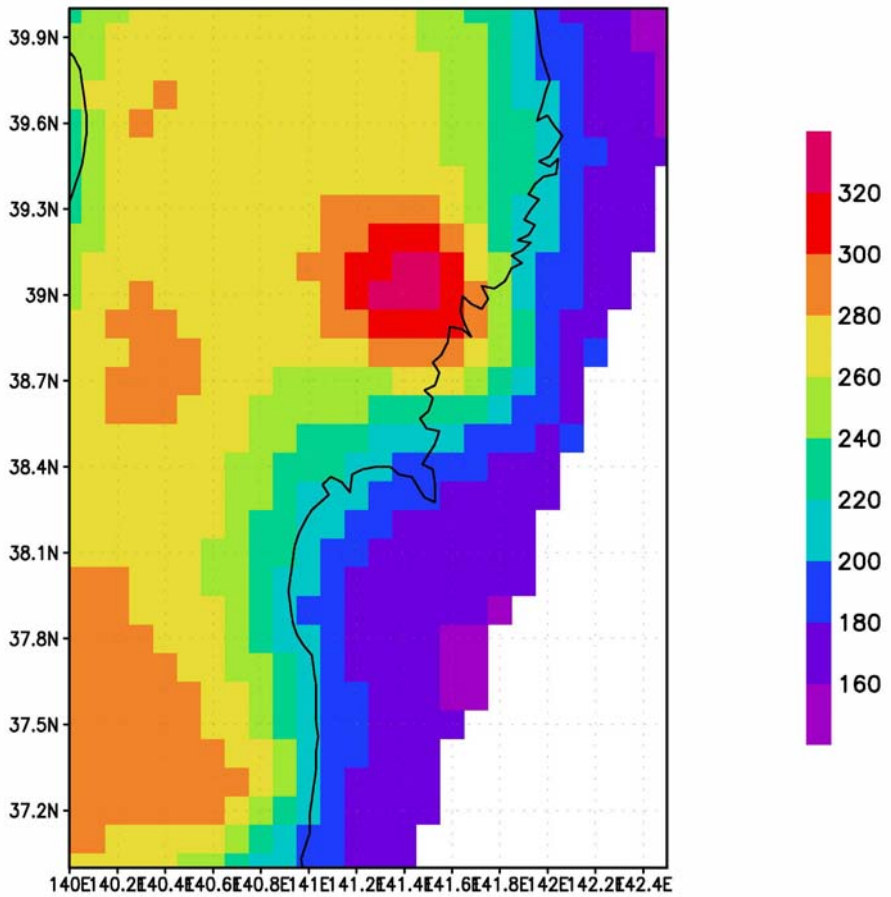
Jan. 14, 2004

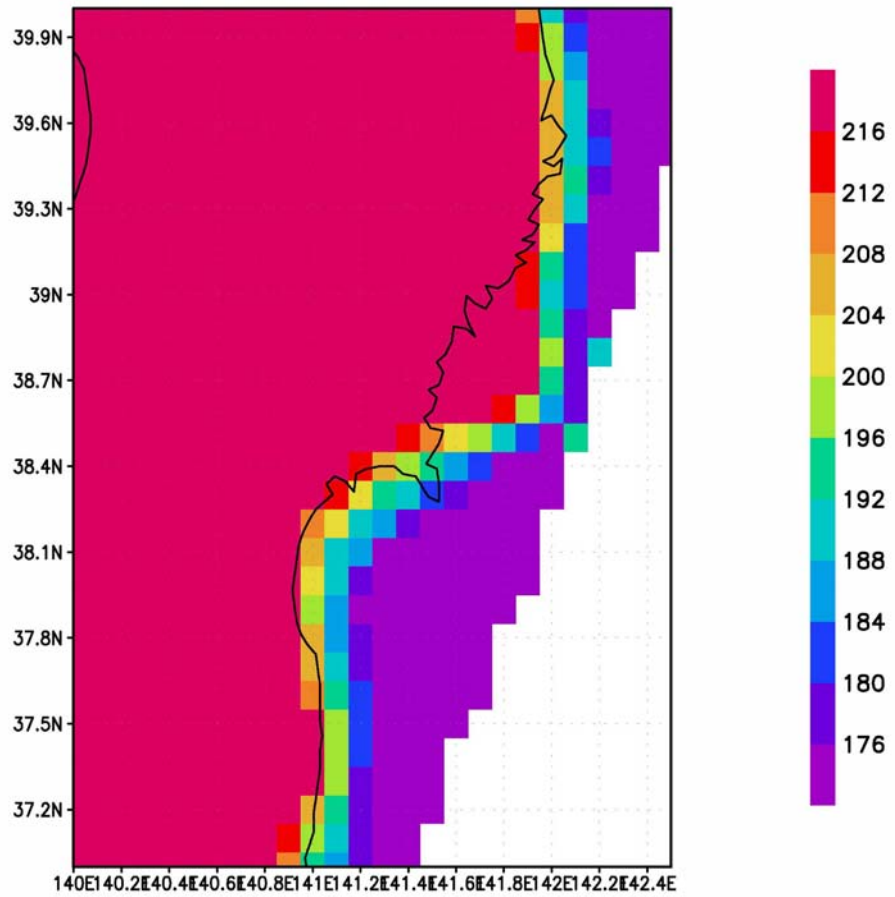


May 25, 2004

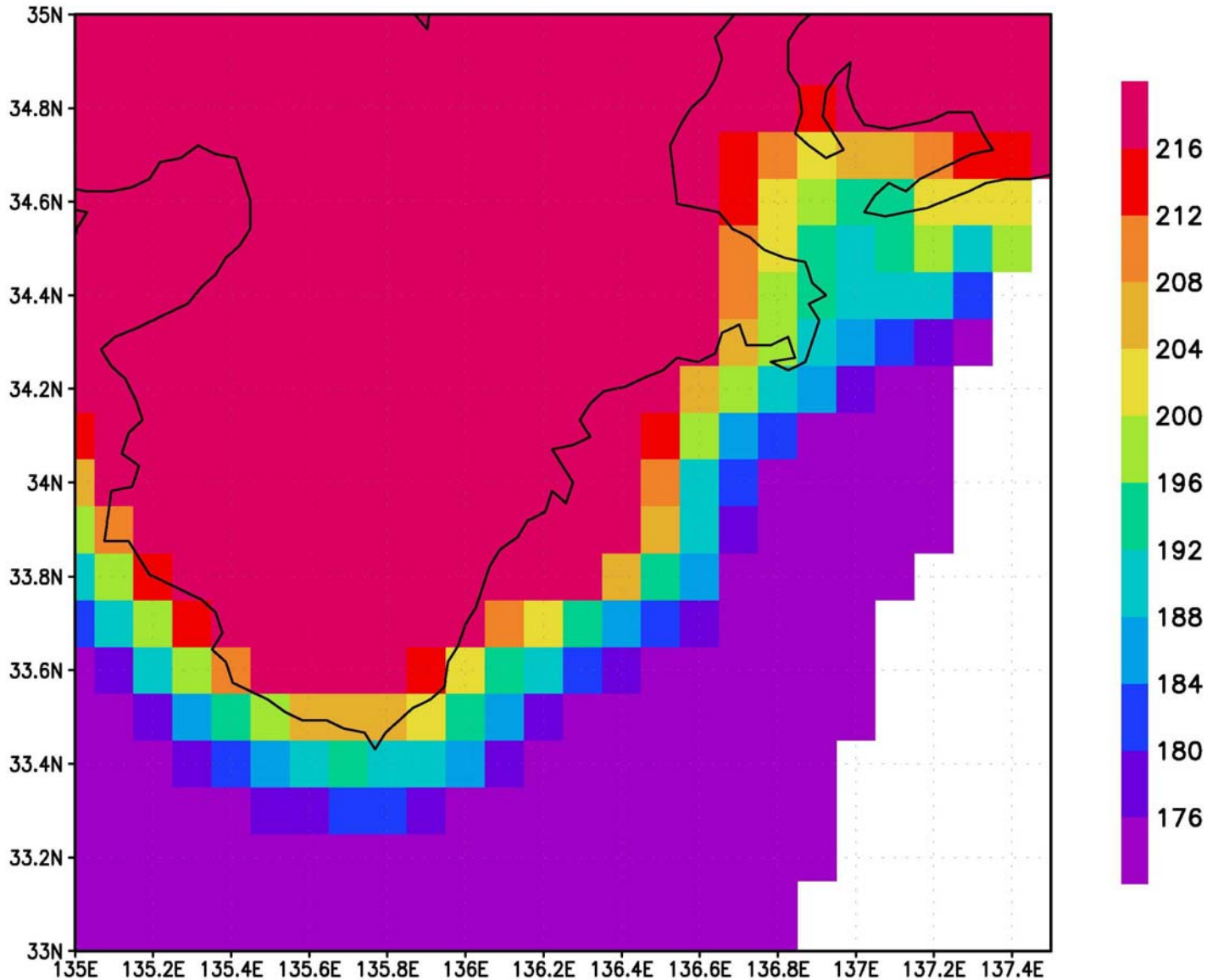


Another example (1) of RFI on Apr. 12, 2003 along 112D

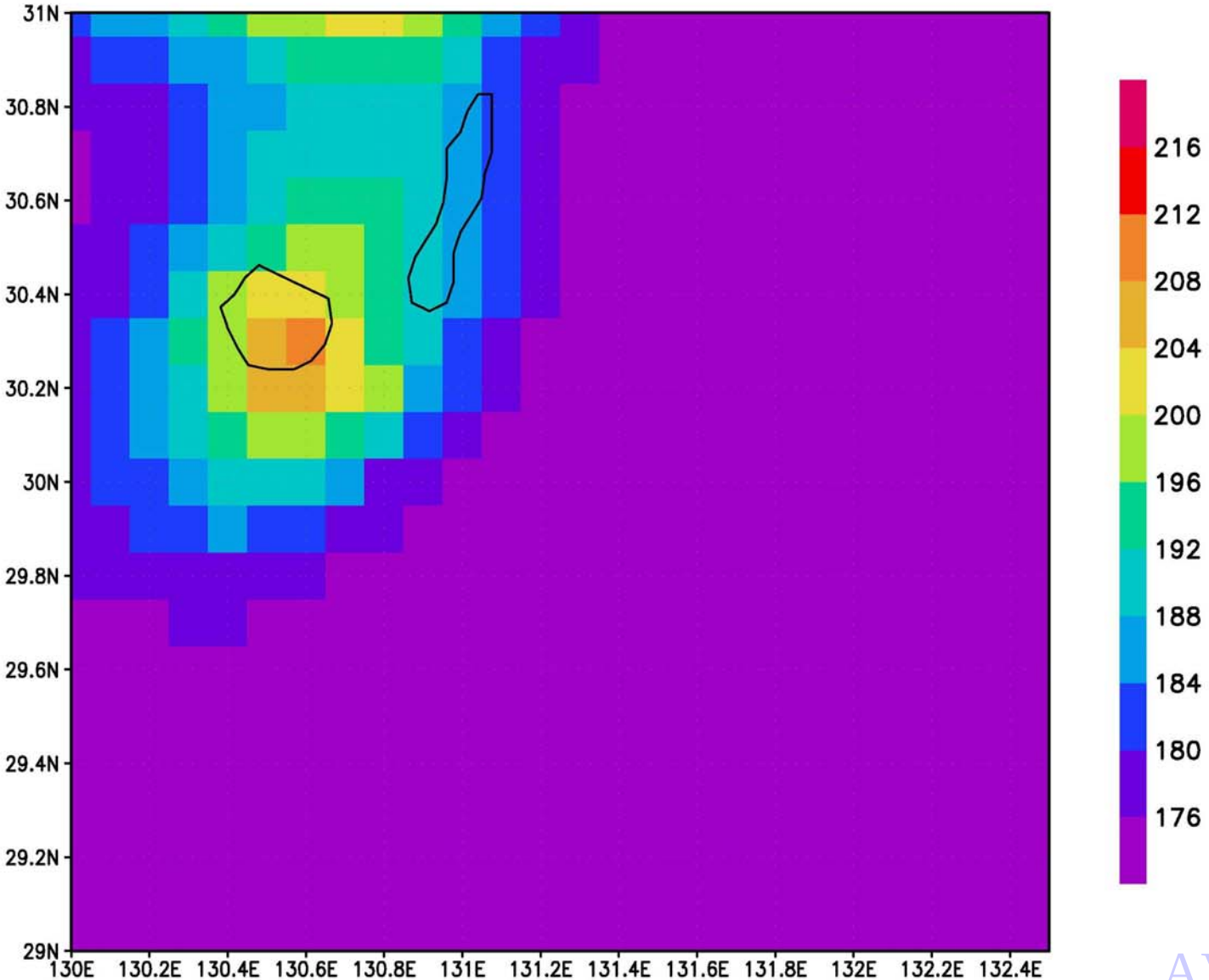




Another Example (2) of RFI on Apr. 14, 2004 along 114D



Another example (3) of RFI on Oct. 14, 2003 along 111D



AVHRR

Summary of RFIs

There are many sources of RFIs in Japan, and RFIs are found sometimes over the ocean

RFIs take various shapes and intensities

Replace 6GHz SST with 10GHz SST in doubtful areas, when SST is larger than 10C. Set SST missing in doubtful areas when SST is lower than 10C

Land contaminations

Microwave emission of 6V

Ocean 160K, Land 260 ~ 280K

1% of land contamination corresponds to about 1K error of 6V over the ocean,

and to 2C error of SST

Estimation of land contamination

for the 112 path Descending

1. Observation data of 6V Tb increment

averaged during a period from Jul. 2002

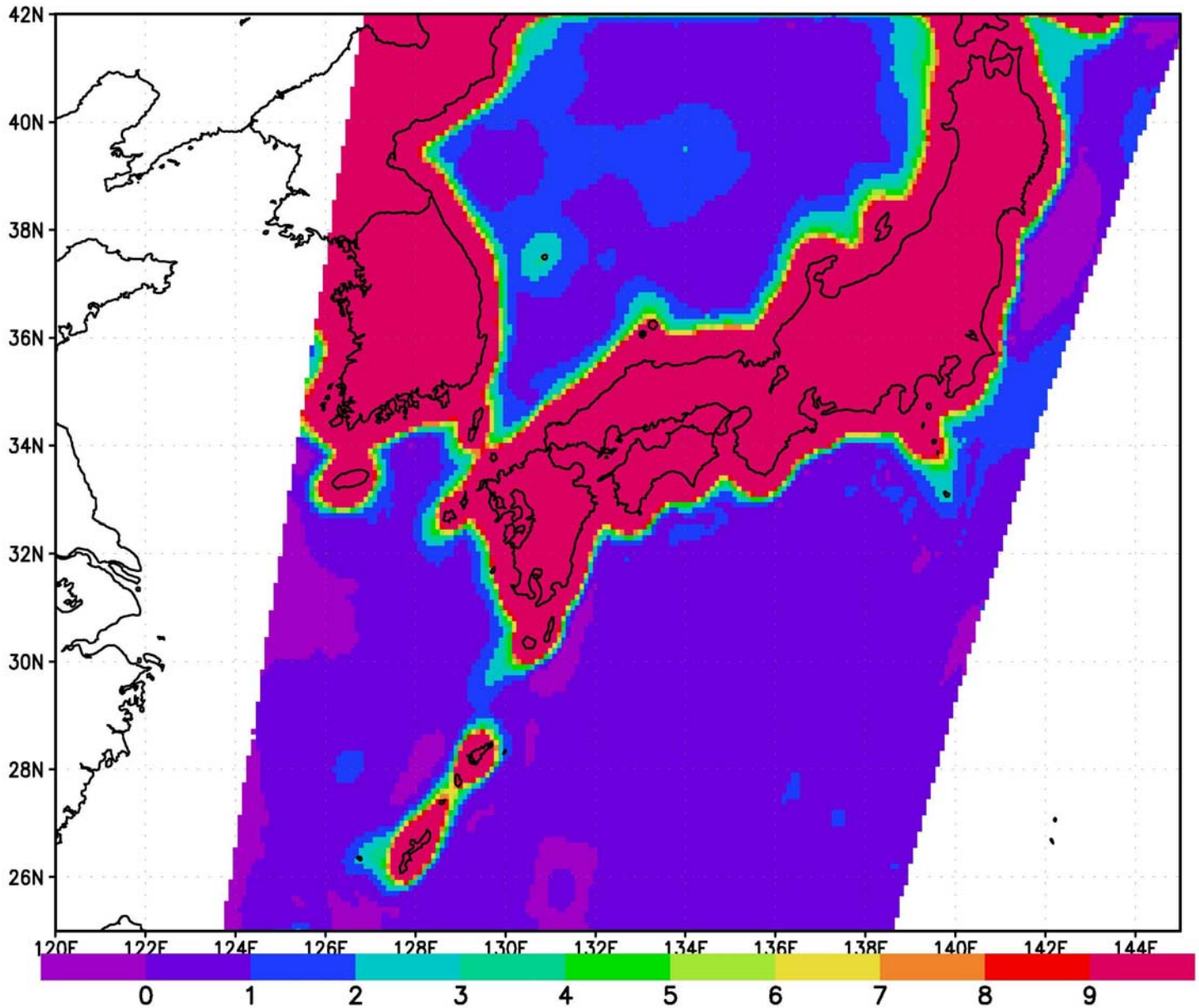
to Dec. 2003

2. Simulation of land contamination

AMSR-E antenna pattern used

ocean 0% ; land 100%

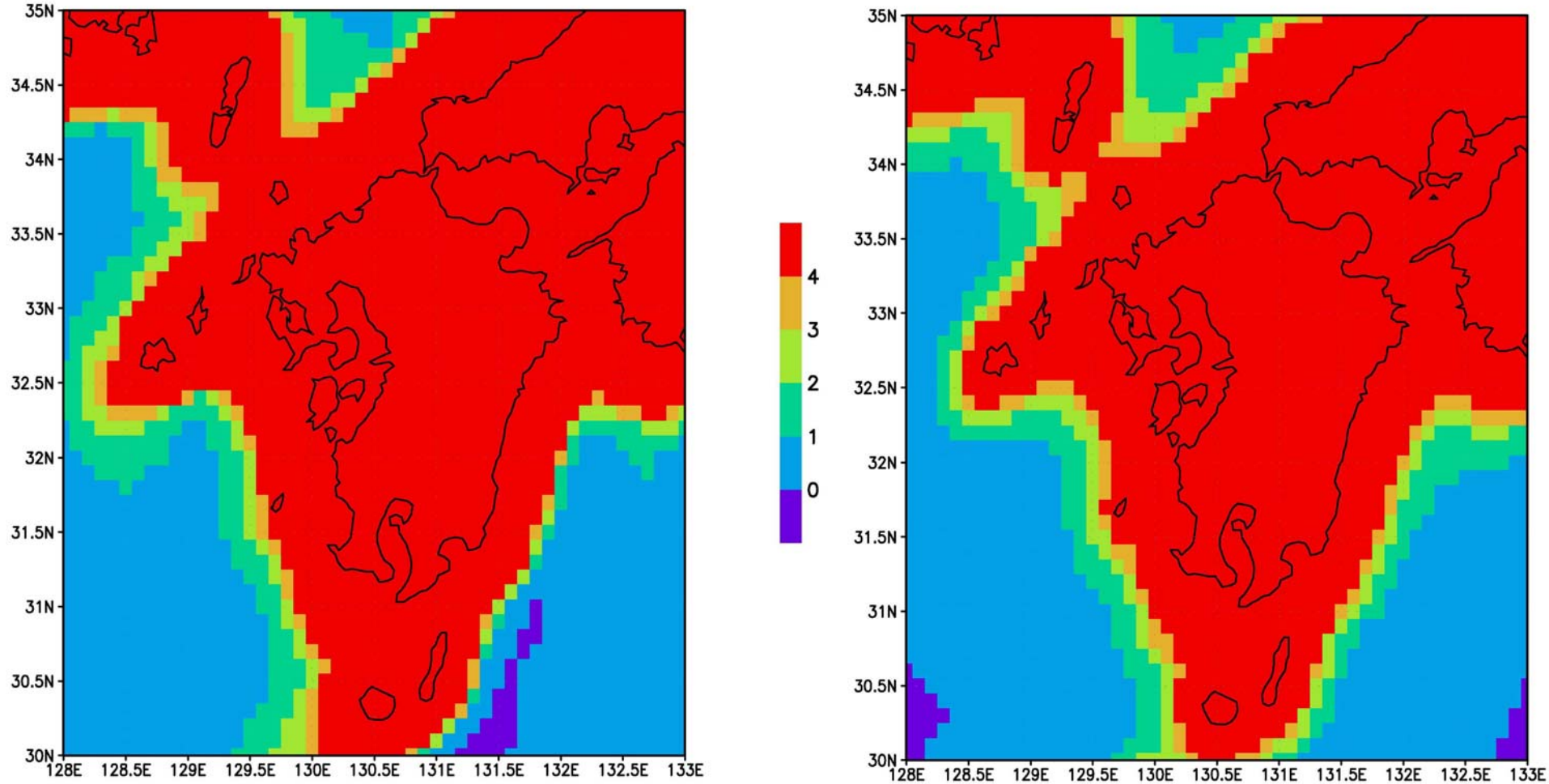
6V Tb increment due to land emission (K) along 112 D



Comparison of land contamination

Observation (K)

Simulation (%)



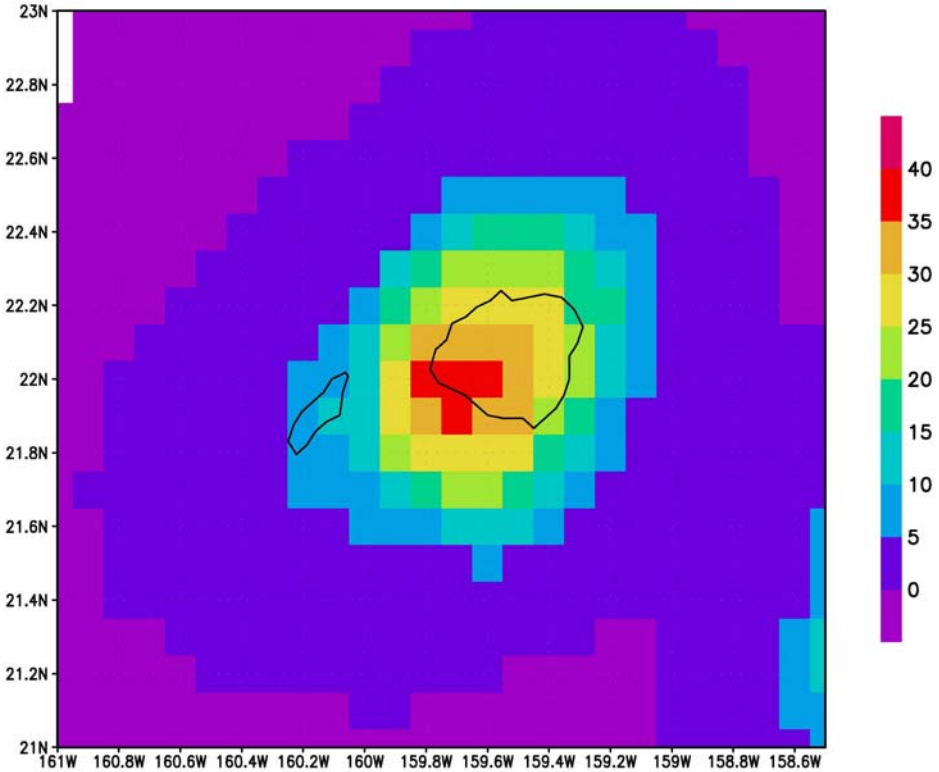
Geo-location error

Imposing difficulties of land contamination problem

Geo-location Errors / Descending Orbits

Right hand side

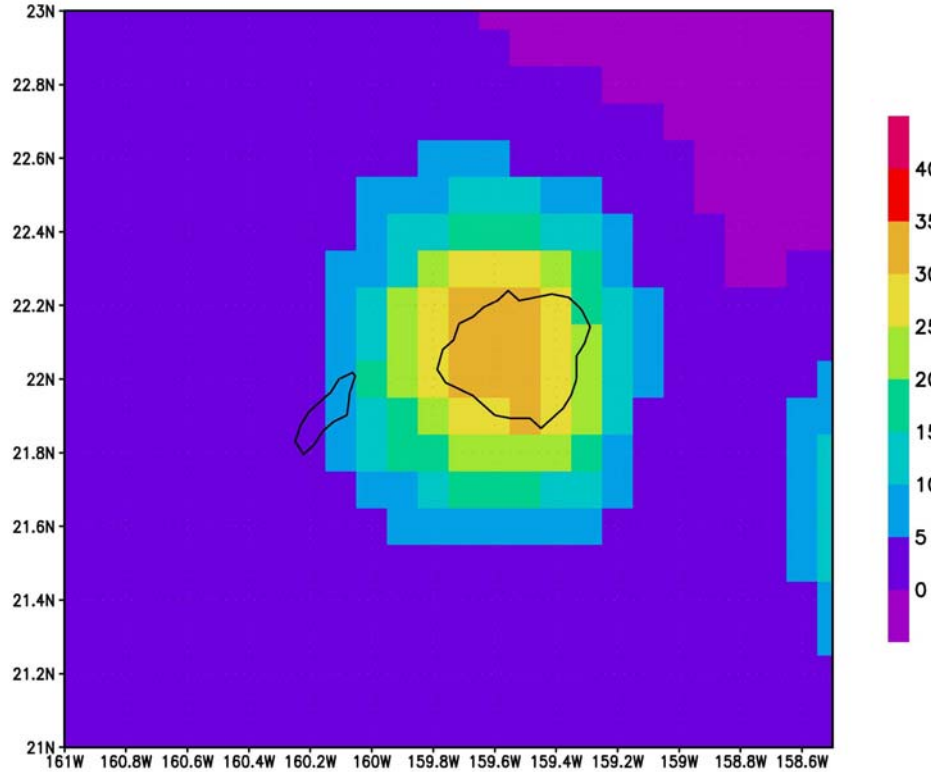
smaller incidence angle



15Km

Left hand side

larger incidence angle



10Km

Summary of land contaminations

There are small differences between observations and simulations of land contamination

Geo-location errors impose more difficulties of resolving land contamination problem

Movies

Period from Mar. 1, 2004 to Jul. 25, 2004

5-day running mean